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6.1 INTRODUCTION

The California Energy Commission (CEC) conducts its review of alternatives to satisfy the Warren-Alquist Act and the California Environmental Quality Act (CEQA). Appendix B (f) (1) of the CEC Guidelines requires a discussion of the range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project. The criteria and objectives that led to the selection of the site and design features of the proposed SSU6 are provided in Sections 2.0 and 3.2.1. A detailed discussion of the alternatives considered is presented in this section. An alternative location for the proposed geothermal power plant project is not practical because of the facility's dependence on the location of the geothermal resource. A detailed discussion of the geothermal resource area and the reasons for facility component locations are provided in Sections 2.3 and 3.2. Alternatives were evaluated that might avoid or reduce any significant environmental effects.

6.2 ALTERNATIVES EVALUATED

Two alternatives, the No Project Alternative and the Alternate L-Line Interconnection, were identified and fully evaluated in this AFC. Other alternatives were initially identified and evaluated as discussed in Section 6.2.3; however, the analysis of these other potential alternatives demonstrates that no other feasible alternatives exist, based upon the project objectives and the geothermal resource availability, which is described in detail in Section 2.3 and Section 3.2.

6.2.1 No Project Alternative Analysis

The No Project Alternative would result in no development of the proposed SSU6 Project. Existing agricultural operations would continue on the land that would be used by the SSU6 Project. Geothermal energy production would not occur and would not be provided to California's energy market. The No Project Alternative would not help in meeting the future energy demands of Imperial County and would not diversify energy sources in Southern California. Additionally, this alternative would not meet the objectives in Section 2.0 of this document. Specifically, this alternative would not achieve CEC's policy to maximize the use of geothermal energy to generate electricity (Imperial County General Plan, Geothermal Element, 1993). The use of reliable, clean, efficient power using renewable geothermal resources would not occur and would hinder the fulfillment of the long-term energy needs of California. Although the No Project Alternative would result in less environmental impact as described in the following subsections, it would not meet the project objectives.

Consistent with Section 15126.6 of the State CEQA Guidelines, this analysis addresses the No Project Alternative. As stated in Section 15126.6(e)(1), the purpose of describing and analyzing the No Project alternative is to allow the CEC to compare the proposed project with the impacts of not approving the proposed project. The analysis of the No Project alternative is intended to present information about the practical consequences of project disapproval. While the No Project analysis is based upon the existing conditions described in this document, it is also relevant to consider the conditions that are "reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available

information and community services" (CCR Section 15126.6(e)(2)). Additionally, the CEQA Guidelines note that if disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, this "no project" consequence should be discussed (Section 15126.6(3)(3)(B)).

Consistent with these provisions of the CEQA Guidelines, this analysis of the No Project Alternative also considers the probable future development of the project area with geothermal facilities. As described in Sections 2.3 and 3.2, the plant site and well pads are uniquely situated to enable efficient extraction of geothermal resources and production of geothermal electrical power. The proposed plant site is designated for geothermal development by the County's General Plan; development of the site is contemplated and regulated by the Geothermal Overlay Zone (Title 9, Division 17, Section 91701 and 91702 of the County's Land Use Ordinance). Development of certain geothermal facilities is entitled as of right by the Geothermal Overlay Zone while certain major geothermal facilities are conditionally permitted. Therefore, it is predictable that development of production wells and power facilities would occur at the project site, which is ideally situated for such uses. The proposed project maximizes the development of the resource while minimizing the potential environmental effects through the project design elements incorporated by the Applicant as well as the implementation of the recommended mitigation measures.

6.2.1.1 Air Quality

If the proposed project were not constructed, the less-than-significant air quality impacts, primarily the temporary increase in H_2S levels and increase in PM_{10} emissions from the proposed SSU6 Project, would not occur (see Section 5.1.2). However, the electricity that would be generated by the SSU6 Project would likely be generated by a gas-fired power plant. A quantitative comparison has been developed of the air quality emissions from the proposed SSU6 Project versus those from the generation of electricity by means of natural gas. This includes review of the criteria pollutants, noncriteria pollutants, and greenhouse gases. Table 6.2-1 presents the annual emissions of criteria pollutants, non-criteria pollutants, and greenhouse gases of the SSU6 Project compared to emissions from recent and typical combined cycle projects permitted in California and ratioed to equivalent megawatts of 180.

These emissions were compared on a normal operating scenario and show the air quality benefits of geothermal energy. Furthermore, when comparing the total emissions from fuel development for natural gas, including well drilling, gas conveyance to processing facilities, and conveyance to a power plant, to those of geothermal energy development, the air quality benefits of the SSU6 Project increase significantly.

Under the No Project Alternative, the comparative air quality benefits of the project versus having the electricity needs supplied by a natural gas fired power plant would be lost. Additionally, dust, odor and other air quality impacts associated with agricultural equipment, crop dusting, field burning and other agricultural activates would continue.

6.2.1.2 Geology

If the SSU6 Project were not constructed the less-than-significant landslide, liquefaction, subsidence and other potential impacts described in Section 5.2.2 would not occur.

6.2.1.3 Agriculture and Soils

The less-than-significant removal of Prime Farmland or Farmland of Statewide Importance associated with the SSU6 Project would not occur if the No Project Alternative were implemented (see Section 5.3.2). Additionally, the temporary disturbance to soils and agricultural lands resulting from construction activities would not occur if the No Project Alternative were implemented. As introduced in Section 5.3.3, IID's Water Conservation and Transfer Project/Habitat Conservation Plan (ID 3) could result in permanently fallowing up to 83,000 acres of Prime Farmland or Farmland of Statewide Importance within the IID's water service area to conserve water. Though the location of this acreage has not been identified, agricultural lands in the geothermal zone may be fallowed because this land has an inherent beneficial use other than agricultural cultivation. Therefore, loss of agricultural land may occur under the No Project Alternative as a result of this water conservation program. Even if the proposed project is not approved, the development of other geothermal facilities at the project site would be consistent with regional plans and zoning. Such development would remove the project site from agricultural uses, similar to the proposed project.

6.2.1.4 Water Resources

The No Project Alternative would result in no development of the proposed SSU6 Project. The potential less-than-significant impacts to water quality from the SSU6 Project described in Section 5.4.3 would not occur and no mitigation would be required. Agricultural activity would continue on the project site, using approximately 572 acre-feet per year more water than the proposed project. Potential impacts to surface and groundwater quality related to the application of fertilizer and pesticides on agricultural lands would continue under the No Project Alternative. Even if the proposed project is not approved, the development of other geothermal facilities at the project site would be consistent with regional plans and zoning. Such development would have impacts similar to or greater than those of the proposed project.

6.2.1.5 Biology

The No Project Alternative would result in no development of the proposed SSU6 Project. The less-than-significant potential impacts to biological resources with mitigation from the SSU6 Project would not occur (see Section 5.5.2). Even if the proposed project is not approved, the development of other geothermal facilities at the project site would be consistent with regional plans and zoning. Such development would have impacts similar to or greater than those of the proposed project.

6.2.1.6 Cultural Resources

The No Project Alternative would result in no development of the SSU6 Project; therefore, potential less-than-significant impacts to cultural resources with mitigation would not occur (see Section 5.6.2). Even if the proposed project is not approved, the development of other geothermal facilities at the project site would be consistent with regional plans and zoning. Such development would have impacts similar to or greater than those of the proposed project.

6.2.1.7 Paleontological Resources

The No Project Alternative would result in no development of the SSU6 Project; therefore, potential less-than-significant impacts to paleontological resources with mitigation would not occur (see Section 5.7.2). Even if the proposed project is not approved, the development of other geothermal facilities at the project site would be consistent with regional plans and zoning. Such development would have impacts similar to or greater than those of the proposed project.

6.2.1.8 Land Use

The No Project Alternative would result in no development of the SSU6 Project; therefore, potential less-than-significant impacts to land use resources would not occur (see Section 5.8.2). Even if the proposed project is not approved, the development of other geothermal facilities at the project site would be consistent with regional plans and zoning. Impacts would be similar to those of the proposed project.

6.2.1.9 Socioeconomics

Under the No Project Alternative, the SSU6 Project would not be built. Though the less-than-significant impacts to housing and schools would not occur, no additional employment opportunities would be realized in Imperial County and the significant school and tax revenues that would be associated with the SSU6 Project would also not be realized (see Section 5.9.2). Even if the proposed project is not approved, the development of other geothermal facilities at the project site would be consistent with regional plans and zoning. Impacts would be similar to those of the proposed project.

6.2.1.10 Traffic and Transportation

The No Project Alternative would result in no development of the SSU6 Project; therefore, potential less-than-significant impacts to traffic and transportation would not occur (see Section 5.10.2). However, traffic related to agricultural use of the project site would continue. Even if the proposed project is not approved, the development of other geothermal facilities at the project site would be consistent with regional plans and zoning. Such development would have impacts similar to or greater than those of the proposed project.

6.2.1.11 Noise

The No Project Alternative would result in no development of the SSU6 Project; therefore, potential less-than-significant noise impacts with mitigation would not occur (see Section 5.11.2). Noise associated with agricultural equipment and other agricultural activities at the project site would continue. Even if the proposed project is not approved, the development of other geothermal facilities at the project site would be consistent with regional plans and zoning. Such development would have impacts similar to or greater than those of the proposed project.

6.2.1.12 Visual Resources

The No Project Alternative would result in no development of the SSU6 Project; therefore, potential less-than-significant impacts to visual resources would not occur (see Section 5.12.2). Periodic dust plumes and other visual impacts associated with growing and harvesting agricultural crops at the site would continue. Even if the proposed project is not approved, the development of other geothermal facilities at the project site would be consistent with regional plans and zoning. Such development would have impacts similar to or greater than those of the proposed project.

6.2.1.13 Waste Management

If the No Project Alternative were implemented, the non-hazardous and hazardous wastes that would be generated by the SSU6 Project would not occur. Waste associated with growing agricultural crops and equipment maintenance would continue. Even if the proposed project is not approved, the development of other geothermal facilities at the project site would be consistent with regional plans and zoning. Such development would have impacts similar to or greater than those of the proposed project.

6.2.1.14 Hazardous Materials

The less-that-significant potential for hazardous materials spills/releases or fire from the SSU6 Project (see Section 5.14.2) would not occur under the No Project Alternative. The risk of releases/spills or fire related to fertilizers, pesticides and fuels used for agricultural operations at the project site would continue. The potential risks associated with the drift of hazardous materials from crop dusting activities off site would also continue. Even if the proposed project is not approved, the development of other geothermal facilities at the project site would be consistent with regional plans and zoning. Such development would have impacts similar to or greater than those of the proposed project.

6.2.1.15 Public Health

The No Project Alternative would result in no development of the SSU6 Project; therefore, potential less-than-significant impacts to public health would not occur (see Section 5.15.2). Even if the proposed project is not approved, the development of other geothermal facilities at the project site would be consistent with regional plans and zoning. Such development would have impacts similar to or greater than those of the proposed project.

6.2.1.16 Worker Safety

The No Project Alternative would not likely reduce the risk to worker safety of those employees that are employed. Assuming that the workers anticipated for this project would be qualified for projects of a similar nature, and would likely be employed elsewhere on projects of a similar nature, the safety risks to these workers are not anticipated to be changed by the No Project Alternative.

6.2.1.17 Cumulative Impacts

The Project would not result in cumulatively considerable impacts. Though the No Project Alternative would not directly contribute to cumulative impacts, this alternative would not result in the generation of electricity from a renewable resource. Even if the proposed project is not approved, the development of other geothermal facilities at the project site would be consistent with regional plans and zoning. Such development would have cumulative impacts similar to or greater than those of the proposed project.

6.2.1.18 Summary of No Project Alternative Impacts

Assuming that the No Project Alternative resulted in a continuation of the existing agricultural uses, the project's insignificant or mitigated impacts related to air quality, geology, water resources, cultural resources, paleontological resources, land use, traffic and transportation, noise, visual resources, waste management, hazardous materials, public health and worker safety would not occur. However, the current environmental conditions resulting from agricultural activities would continue on site. Consequently, impacts to air quality, water resources, water quality, traffic, noise, visual resources, waste management, and hazardous materials associated with agricultural activities on the SSU6 Project site would continue.

If development of geothermal resources by other projects were to occur, as permitted by the County's General Plan and zoning, construction and operational impacts similar to those identified for the SSU6 Project would occur. Therefore, the No Project Alternative would not substantially reduce any of the potential environmental effects of the proposed project. Furthermore, the Applicant has voluntarily incorporated substantial project design features that eliminate or reduce the potential impacts of the project. See Table 3.7-1.

The No Project Alternative would not satisfy the project objectives. If agricultural uses were to continue, none of the project objectives would be satisfied. Even if the site were left to be developed in the future with geothermal facilities, pursuant to the County General Plan and zoning, the project objectives would not be satisfied. As discussed in detail in Sections 2.3 and 3.2, the project site provides a unique opportunity to efficiently extract geothermal resources and develop a geothermal power plant in close proximity to the resource. Developing less of the resource from this location would eliminate the opportunity to contribute to the State's efforts to maximize the use of geothermal energy to generate electricity. Furthermore, such activities may not incorporate the extensive project design features that the Applicant has voluntarily incorporated into the proposed project to reduce potential environmental impacts. Additionally, the No Project Alternative would not enable the Applicant to meet the commercial and economic objectives of the project. As a result, development of the geothermal resources within this KGRA consistent with State and regional plans and policies would be further delayed.

6.2.2 Alternate L-Line Interconnection Analysis

The Applicant has identified an alternative route for the L-Line Interconnection, which would serve as an alternative route to the existing L-Line for the last portion of the proposed L-Line Interconnection. This alternative route would replace the last 2.8 miles of the L-Line Interconnection route through BLM-managed lands with a route north from milepost L-13.3

along State Highway 86 (SH-86) for approximately 7.5 miles to the intersection of SH-86 and the L-Line. This alternative line would avoid BLM lands (see Figure 6.1-1). However, except for the new route connecting to the L-Line, this alternative has the same features (power plant, well pads, pipelines, etc.) as the proposed SSU6 Project. Table 6.2-2 provides the estimated acreage impact for this alternative.

The Applicant is seeking environmental review of this alternative interconnection concurrent with the review of the proposed alignment to ensure that the interconnection can be made even if the proposed route is determined to be infeasible during the federal review of the portion of the route that crosses BLM land. The following provides a summary of the analysis of the relevant impacts. Additional information is provided in the associated Technical Appendices.

6.2.2.1 Air Quality

Air quality impacts from this alternative would be almost identical to the proposed SSU6 Project. Fugitive dust and other air pollutant emissions generated during the construction of the alternative line would increase slightly related to the increase in the length of the line by 4.7 miles. The contribution of these additional air emissions to the overall construction emissions would be insignificant with the mitigations proposed.

6.2.2.2 Geology

Implementation of the Alternate L-Line Interconnection would not significantly change the affected environment (see Section 5.2.1 and Appendix J). The geology in the area of this alternative route is composed of lake deposits, the same as the remainder of the route (see Figures 5.2-3A to 5.2-3E). There are no significant impacts to geologic resources or from geologic hazards for this alternative. Therefore, there are no applicable mitigation measures.

6.2.2.3 Agriculture and Soils

The Alternate L-Line Interconnection would traverse approximately 7.5 miles northwest along SH- 86, and would connect the proposed L-Line Interconnection transmission line with the IID's existing L-Line. This alternate route would traverse 10 different soil-mapping units as listed in Table 6.2-3. No soil survey data was available for an intermittent 0.9 miles of this transmission line alternative route between milepost 5.1 and 6.0.

The surface textures of these soils are generally loams, sands, and gravelly sands. The shrink-swell potential of 3 of the 10 soil units ranges up to high, the susceptibility of the soils to erosion from water and wind ranges up to high for 4 and 6 of the 10 soil mapping units located along the proposed Alternate L-Line Interconnection Alternate. Five of the soils have shallow perched water tables.

As shown on Table 6.2-4, the Alternate L-Line Interconnection Alternate would traverse approximately 2.86 miles of Prime Farmland and 3.7 miles of Farmland of Statewide Importance. This alternative would traverse through approximately 2.86 more miles of Prime Farmland and 1.85 more miles of Farmland of Statewide Importance than the Proposed SSU6 Project.

Approximately 66 more acres of land is expected to be disturbed during construction of this alternative. Approximately 0.81 acres of more land is expected to be developed with concrete foundations for the towers during operation of this alternative. Construction and operation-related impacts associated with the Alternate L-Line Interconnection would be similar to those described for the Proposed SSU6 Project. With implementation of the measures outlined in Section 5.3.4, impacts to soil resources from construction and operation of this alternative would be reduced to a less than significant level.

6.2.2.4 Water Resources

The Alternate L-Line Interconnection is underlain by the same water resources as the proposed SSU6 Project (see Section 5.4.1). Additional water resources impacts related to this alternative would be limited to potential construction related impacts to surface water as described in Section 5.4.2. Implementation would not change potential impacts or applicable mitigation measures.

6.2.2.5 Biology

The habitat along the Alternate L-Line Interconnection consists of agriculture and residential on the east side, with creosote bush scrub on the west side. Details regarding biological resource surveys conducted for this alternative are provided in Appendix K. This portion of the route was not found to represent a significant shorebird flyway and impacts to locally migrating shorebirds are not expected. Burrowing owls were not observed along this route during the biological surveys. This alternative route may affect small areas of native habitat that have marginal value to native plant and wildlife species. No significant bird flyover activity was observed for this alternative. This alternative would result in similar less-than-significant impacts to biological resources, with mitigation, as the proposed SSU6 Project.

6.2.2.6 Cultural Resources

One archaeological site and three isolated artifacts were identified along the Alternate L-Line Interconnection corridor (see Appendix H). Several previously recorded sites are also present along or adjacent to this corridor, although these were not relocated during the current inventory. The sites have not been formally evaluated, however, and must be treated as significant until determined otherwise. Consequently, it is recommended that these sites be avoided during all project-related activities. If they cannot be avoided, testing and evaluation would be required. It should be noted, however, that these sites reflect little data potential beyond recordation, and exhibit little to no integrity. Consequently, they are likely not important or significant resources and are likely not eligible for listing in state or federal historic registers. If determined significant during the evaluation process, however, mitigation of impacts will be necessary.

6.2.2.6.1 Sites Within or Adjacent to SH-86

Three of the sites (CA-IMP-6415, -6416, and -7843) and one isolate (IMP-6436-I) are within or adjacent to the proposed transmission line corridor along SH-86. The areas of the three sites are also highly disturbed by current agricultural practices, and no evidence of these sites was

observed. The prehistoric isolate (IMP-6436-I) occurs in the same vicinity, but could not be relocated.

CA-IMP-6415: This site consists of a prehistoric lithic scatter adjacent to SH-86 immediately outside the proposed transmission line corridor. The site was recorded in 1990 during investigations conducted by Caltrans along the highway, in preparation for highway improvement activities. The area has been heavily graded, and no cultural materials were observed within the survey corridor.

CA-IMP-6416: This site consists of a prehistoric lithic scatter adjacent to SH-86 immediately outside the proposed transmission line corridor. The site was recorded in 1990 during investigations conducted by Caltrans along the highway, in preparation for highway improvement activities. Four flakes were observed in the site vicinity, outside the survey area, which has been heavily graded. No artifacts were observed within the survey corridor.

CA-IMP-7843. This site consists of the Westside Main Canal, which parallels the northern side of SH-86 near the proposed transmission line corridor. The proposed transmission line would cross the canal, but would not result in any impacts to the resource.

IMP-6436-I (*Isolate).* This isolate consists of a metavolcanic flake 75 feet north of SH-86 and could not be relocated.

6.2.2.6.2 Sites Not Within or Adjacent to SH-86

The following sites are near the Alternate L-Line Interconnection corridor, but not within or adjacent to it.

CA-IMP-155. This site consists of a prehistoric habitation site with reported house remains. It is approximately 400 meters (1,320 feet) north of the transmission line corridor along SH-86. The site is not recorded within the area of potential effect.

CA-IMP-6427. This site consists of a prehistoric lithic and ceramic scatter south of SH-86 near the proposed transmission line corridor. The proposed transmission line would be located north of the highway in this area. Site CA-IMP-6427 was recorded in 1990 during investigations conducted by Caltrans along the highway, in preparation for highway improvement activities.

CA-IMP-6428. This site consists of a short segment of an apparent prehistoric trail. It is south of SH-86 near the proposed transmission line corridor. The proposed transmission line would be located north of the highway in this area. Site CA-IMP-6428 was recorded in 1990 during investigations conducted by Caltrans along the highway, in preparation for highway improvement activities.

CA-IMP-6480. This site consists of a prehistoric lithic scatter recorded in 1990. The site is approximately 600 meters (1,980 feet) south of SH-86, outside the proposed transmission line corridor.

CA-IMP-6481. This site consists of a prehistoric ceramic scatter recorded in 1990. The site is approximately 600 meters (1,980 feet) south of SH-86, outside the proposed transmission line corridor.

As noted above, one archaeological site and three isolated artifacts were identified along the proposed transmission line corridor, which follows SH-86. Several previously recorded sites are also present along or adjacent to this corridor, although these were not relocated during the current inventory. The sites have not been formally evaluated, however, and must be treated as significant until determined otherwise. Consequently, it is recommended that these sites be avoided during all project-related activities. If they cannot be avoided, testing and evaluation will be required. It should be noted, however, that these sites reflect little data potential beyond recordation, and exhibit little to no integrity. Consequently, they are likely not important or significant resources and are likely not eligible for listing in state or federal historic registers. If determined significant during the evaluation process, mitigation of impacts would reduce impacts to less than significant. Mitigation would comply with those measures specified in Section 5.6.4.1 and will include retention of a qualified archaeologist, implementation of a cultural resources monitoring and mitigation plan, worker training, and construction monitoring.

6.2.2.7 Paleontological Resources

The Alternate L-Line Interconnection is underlain by fossiliferous sediments of both the Lake Cahuilla Beds and Brawley Formation, the latter exposed at the surface in some portions of the ROW and overlain by a thin veneer of Lake Cahuilla Beds elsewhere. Fossils in both formations could potentially be impacted by excavations along this route (see Appendix I). Because these sediments are older, the fossils contained in them are more significant. However, because both Lake Cahuilla Beds and Brawley Formation sediments contain fossils, which are considered significant until evaluated, these areas are considered to have "high sensitivity." Therefore, the Alternate L-Line Interconnection would have the same degree of high sensitivity and would require the same paleontological resource monitoring and mitigation as the proposed SSU6 Project (see Section 5.7.4). With mitigation, impacts are expected to be less than significant.

6.2.2.8 Land Use

The Alternate L-Line Interconnection would include existing land uses such as agricultural, residential, open space, and SH-86 along the route.

A discussion of construction-related and operations and maintenance impacts for this alternative would be similar to the proposed SSU6 Project. This alternate route would be consistent with the General Plan policies recommending transmission lines be located along existing ROW wherever possible. However, this alternative is 4.7 miles longer and would proportionately affect more property. This alternative would require less administrative processing, as it would not pass through BLM land. Therefore, a BLM Right-of-Way Grant would not be required for construction of the line. Additionally, a CDCA Plan Amendment would not be required because the transmission route would not run through CDCA boundaries. This alternative would not result in significant land use impacts.

6.2.2.9 Socioeconomics

Given the geographical proximity of all the components, the socioeconomic affected environment for the Alternate L-Line Interconnection includes the same communities in central

Imperial County. The socioeconomic impacts would be similar to the proposed SSU6 Project with an incremental increase in revenues that would be generated by the construction and property related taxes associated with the longer transmission line. There would be no significant adverse socioeconomic impacts associated with this alternative.

6.2.2.10 Traffic and Transportation

This alternative would be substantially longer than the proposed L-Line Interconnection and would require more materials and construction equipment as well as longer construction schedule. The Alternate L-Line Interconnection would be accessible via SH-86 and would require shorter off-road travel for the delivery of materials and equipment.

Several aspects of transmission line steel pole construction and conductor installation could potentially result in impacts. These include: 1) workforce-related traffic; 2) access to proposed tower structure locations; 3) transmission line roadway crossings; and 4) construction equipment and material deliveries. The potential impacts related to this alternative would be the same as those described for the transmission line routes in Section 5.10.2.4. Although the Alternate L-Line Interconnection would require more materials, equipment, and manpower to construct because of its longer distance to connect to the "L" Line to the northwest, no significant traffic impacts are anticipated. Maintenance of the transmission line system would result in negligible vehicle travel and is therefore unlikely to have any adverse impact on the existing roadways crossed by or located near the vicinity of the transmission line poles.

6.2.2.11 Noise

There are five residences within 0.5 miles of SH-86 and approximately 10 more residences within 1.5 miles for the Alternate L-Line Interconnection. Potential noise impacts associated with the Alternate L-Line Interconnection route would occur during construction activities. Noise-sensitive receptors are along SH-86 at a distance of 0.5 miles. As discussed in Section 5.11.2, sound levels resulting from equipment range from 70 to 90 dBA at 50 feet. Based on this range of values, the sound level resulting from construction at these receptors would range from 35 to 55 dBA. These projected levels would be below the County's required construction limit of 75 dBA L_{eq} averaged over an 8-hour period and would be temporary. Therefore, there would be no significant impact because of construction noise along the transmission line

6.2.2.12 Visual Resources

The following factors were considered during the visual study related to the Alternate L-Line Interconnection:

1) visibility of the alternatives on travelers along SH-86
2) duration of view on travelers along SH-86
3) visual impact to southbound travelers related to views toward the Salton Sea

The alternate would parallel the east side of SH-86 for approximately 7.5 miles before interconnecting with the existing L-Line. An additional sensitive view, Sensitive View Area #4 was identified related to this alternative, and it is near the northern end of this route (see Figure

5.12-1). The Scenic Attractiveness Evaluation Form is provided on Figure 6.1-2. This image was taken at approximately 0.25 miles from the intersection of SH-86 and the existing L-Line Interconnection. The photo was taken approximately 11 miles from the proposed power plant. For travelers along SH-86 project visibility would be high as the corridor would be sited in the foreground viewing threshold and viewing duration would be long as this corridor would parallel SH-86 for approximately 7.5 miles (see Figure 6.1-3). Figures 6.1-4 and 6.1-5 depict an existing northbound view and simulation of the Alternate L-Line Interconnection from SH-86 toward the interconnection with existing L-Line, respectively. Table 6.2-5 summarizes the visual impact susceptibility. Table 6.2-6 presents the visual impact severity, and Table 6.2-7 describes the visual impact significance. The Alternate L-Line Interconnection on the east side of SH-86 north of Bannister Road would affect views of the Salton Sea for northbound travelers along SH-86. However, as shown in Figure 6.1-4 an existing transmission line is also in this viewshed and the new transmission line would not substantially change the view. Therefore, the Alternate L-Line Interconnection would not result in significant visual impacts.

6.2.2.13 Waste Management

Impacts related to hazardous and non-hazardous wastes for the Alternate L-Line Interconnection would be the same as the proposed SSU6 Project described in Section 5.13.2. No significant impacts would occur.

6.2.2.14 Hazardous Materials

Impacts to hazardous materials for the Alternate L-Line Interconnection would be the same as those of the proposed SSU6 Project (see Section 5.14.2).

6.2.2.15 Public Health

Impacts to public health for the Alternate L-Line Interconnection would be the same as those of the proposed SSU6 Project (see Section 5.15.2).

6.2.2.16 Worker Safety

Impacts to worker safety for the Alternate L-Line Interconnection would be the same as those of the proposed SSU6 Project (see Section 5.16.2).

6.2.2.17 Summary of Alternate L-Line Interconnection

Impacts to environmental resources from the Alternate L-Line Interconnection would be similar to those expected from the proposed SSU6 Project. However, this alternative would traverse through approximately 2.86 more miles of Prime Farmland and 1.85 more miles of Farmland of Statewide Importance than the proposed SSU6 Project. Additionally, approximately 66 more acres of land is expected to be disturbed during construction of this alternative. This alternative would result in different, but less than significant land use impacts because it is 4.7 miles longer and would proportionately affect more property, thereby increasing the cost of the project. However, it would not require federal permits for development on BLM land. Therefore, a BLM

Right-of-Way Grant would not be required for construction of the line. Additionally, a CDCA Plan Amendment would not be required, because the transmission route would not run through CDCA boundaries. Overall, the Alternate L-Line Interconnection would result in similar, less-than-significant or mitigable environmental impacts as the proposed project.

This alternate route would be longer and, therefore, would involve substantially higher ROW and construction costs. Because IID is a community-owned district, the additional cost would be considered a public detriment. Nevertheless, at this time, it is not known whether the federal permits necessary for construction of the proposed L-Line Interconnection route will be obtained. Therefore, this alternate route has been proposed to ensure that the L-Line Interconnection can be accomplished without reliance upon federal permits for ROW and construction on the BLM land.

6.2.3 Other Alternatives Considered

The SSU6 Project would be competing with other electricity generators selling electricity in the deregulated market. The geothermal technology proposed for SSU6 was selected based on the availability, quantity and quality of the renewable resource for power generation. The technology chosen will provide a reliable and diversified mix of power sources for Imperial County and California and provide a comparably clean and efficient use of geothermal resources.

The purpose of considering alternative generating technologies is to determine whether any of the technologies could potentially avoid or substantially reduce any environmental impacts of the proposed geothermal facility. Other technologies were considered using the selection methodology described below.

6.2.3.1 Selection Criteria

The factors that may be used to eliminate alternatives from detailed consideration are (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts.

The alternatives considered include different resource uses and alternative technologies. Table 6.2-8 summarizes the potential environmental impacts of the various facility alternatives in comparison to the proposed SSU6 Project.

For comparison, the SSU6 Project implements geothermal technology that uses steam or high temperature water obtained from naturally occurring geothermal resources to power steam turbines and is a renewable resource. The use of geothermal power is significant in meeting the future energy demands of Imperial and Riverside Counties and to continue to diversify energy sources in Southern California. The proposed geothermal project would provide energy 24 hours a day, 365 days a year, and would have an average availability of 95 percent or higher, compared to 60 to 70 percent for coal and nuclear power plants (EREN website). The construction duration of the proposed geothermal plant will be 20 months, the same as or less than the construction duration of other generating technologies. The availability, reliability, and renewable source of power, along with the short to average construction duration are the reasons why geothermal power generation is the selected alternative for the SSU6 Project.

6.2.3.2 Natural Gas-Fired Conventional Simple-Cycle

This technology uses gas turbines to achieve relatively high fuel efficiencies and can be constructed rapidly. The gas turbine drives a generator. Efficiency for this type of system is typically 30 to 38 percent. Additionally, natural gas combustion in a state-of-the-art dry low NO_x unit emits less NO_x, CO, volatile organic compound (VOC), sulfur dioxide (SO_2), and particulate matter compared to conventional boiler-steam systems. However, gas-fired power plants emit more than four times more CO_2, a greenhouse gas, than geothermal plants (see Section 5.1). A simple-cycle unit can be constructed rapidly because it requires minimal ancillary facilities. The drawback to this technology is the use of nonrenewable resources for power generation and a significant level of air emissions compared to geothermal technology.

6.2.3.3 Natural Gas-Fired Conventional Combined-Cycle

This technology integrates gas turbines and steam turbines to achieve high fuel efficiencies. The gas turbine drives a generator. The exhaust gas from the generator is routed through a heat recovery steam generator to create steam used to drive a steam turbine-generator. Efficiency for this type of system is typically 50 to 58 percent, resulting in lower air emissions per kWh than simple gas turbine systems or conventional boiler-steam systems. Though natural gas combustion in a state-of-the-art combined-cycle unit emits less NO_x, CO, VOC, SO_2, and particulate matter than simple gas turbine systems or conventional boiler-steam systems, a geothermal facility emits much less of these pollutants (see Table 6.2-1). This technology also uses nonrenewable resources for power generation in addition to creating significantly more air emissions compared to the geothermal technology.

6.2.3.4 Natural Gas-Fired Conventional Furnace/Boiler Steam Turbine Generator

With this technology, oil or natural gas fuel is burned in a boiler to create steam, which is routed through a steam turbine that powers a generator. The steam is condensed and returned to the boiler. This technology is less efficient (35 to 40 percent) than combined-cycle technology and emits more air pollutants per kWh generated. Because of the large size and complex nature of the equipment required, the capital costs and time to construct are greater. Additionally, the cost of generation is comparatively high. Based on lower plant efficiency, higher water consumption, higher capital costs, minimum 24 to 33 month construction duration, use of nonrenewable resources for power generation, and creating a significant level of air emissions compared to the geothermal technology, this technology was eliminated from consideration.

6.2.3.5 Natural Gas-Fired Supercritical Boiler-Steam Turbine-Generator

This technology is similar to conventional boiler-steam turbine technology, but higher pressures and temperatures are employed. The efficiency of this technology is higher than conventional boiler-steam turbine-generator systems (generally 38 to 45 percent), but additional capital costs are incurred to construct the generating units. Consequently, the costs to produce power using supercritical technology are somewhat lower than conventional technology, but higher than natural gas-fired, simple, and combined-cycle technology. Based on lower plant efficiency, higher water consumption, construction period of 30 to 36 months, use of nonrenewable

resources, and creating a significant level of air emissions compared to the geothermal technology, this technology was eliminated from consideration.

6.2.3.6 Coal or Other Solid Fuel-Fired Conventional Furnace/Boiler-Steam Turbine

With this technology, coal, coke or other solid fuels are burned in the boiler, creating steam that is passed through a steam turbine connected to a generator. The steam is condensed and returned to the boiler. The efficiency of this technology is equivalent to a conventional gas-fired boiler/steam turbine unit (35 to 40 percent). However, siting such a plant in California would require importing coal into the state resulting in increased truck and/or train traffic, and coal storage issues. Further, the coal plant would require a greater area and produce more emissions than a geothermal facility of equivalent capacity. A comparable scale coal plant would also result in significantly higher air emission, use of a nonrenewable resource for energy production, and would require a construction period of 30 to 36 months. For these reasons, this technology was eliminated from consideration.

6.2.3.7 Fluidized Bed Combustion

These technologies burn coal or other solid fuels in a hot bed of inert material containing limestone that is kept suspended or fluidized by a stream of hot air. Water coils within the furnace create steam that drives a steam turbine-generator. Atmospheric fluidized bed combustion has an efficiency of 35 to 40 percent, while pressurized fluidized bed combustion has an efficiency of 40 to 45 percent. This technology is currently commercially available for units up to 300 MW. Again, issues involving the importation of coal, the greater plant space required, higher capital and operating costs, a 30 to 36 month construction period, higher water consumption, and the higher emissions per output compared to geothermal technologies resulted in the elimination of this technology from further consideration.

6.2.3.8 Integrated Gasification Combined-Cycle

This technology gasifies coal to produce a medium Btu gas that is used as fuel in a gas turbine. The coal gasifier is at the same site as the gas turbine, heat recovery steam generator, and steam turbine-generator. The use of low or medium Btu coal gas in base-load gas turbines is still in the late demonstration stage. Because of higher capital costs, issues regarding the importation of coal, the lack of commercial experience, a 36 to 42 month construction duration, and lower plant efficiency leading to higher operating costs, this technology is not competitive with conventional gas-fired simple-cycle or combined-cycle technology and was eliminated from consideration.

6.2.3.9 Solar/Photovoltaics

These technologies either collect solar radiation to heat water to create steam, which drives a steam turbine, or convert solar energy directly, using a silicon wafer. Several systems that have been used in the U.S. capture and concentrate solar radiation with a receiver. The three main receiver types are mirrors located around a central receiver, parabolic dishes, and parabolic troughs. Except for parabolic troughs, these receiver technologies are not commercially available. Photovoltaic technology uses silicon cells to convert solar radiation to direct current

electricity, which is then converted to alternating current. While photovoltaic technology is commercially available, the cost to operate is high, generally 15 to 25 cents per kWh.

These technologies would require large land areas to generate the proposed 185 MW net at independent system operator (ISO) conditions. For example, centralized solar projects using parabolic trough technology require approximately 5 acres per MW. The land requirement to produce similar capacity as the proposed project is 925 acres. Photovoltaic arrays require similar acreage per MW. Because of the large land area required by these technologies and the high costs to operate them, these technologies were eliminated from consideration.

6.2.3.10 Biomass

Direct combustion, gasification, and anaerobic digestion are the technical alternatives used to convert biomass fuels to electricity. Major biomass fuels include wood wastes, agricultural residues, and municipal solid waste. The scale of commercially available biomass facilities ranges from 5 to 25 MW, which is incompatible with the objectives of the project. Further, such facilities can produce significant air emissions; require fuel deliveries by truck; and, in the case of waste-to-energy facilities, generate concern over the release of toxic emissions. The capacity limitations, potential environmental implications associated with biomass facilities, higher water consumption, and a construction duration in excess of 24 months, resulted in its elimination for further consideration as a feasible alternative generating technology. It is highly unlikely that biomass resources of the scale needed could be sited as an alternative to the proposed facility.

6.2.3.11 Wind Energy

This technology uses wind, which drives a generator to create energy. This technology requires large land areas to generate the proposed 185 MW net at ISO conditions. Wind conditions in the area would not support a wind energy project. Additionally, because of the large land area required by wind technology, the visual impacts, and the high costs resulting from inadequate wind resource, this technology was eliminated from consideration for alternative purposes.

6.2.3.12 Alternative Site

There are no feasible alternative sites for the proposed project. As described in Sections 2.3 and 3.2, the plant site and well pads are uniquely situated to enable efficient extraction of geothermal resources and production of geothermal electrical power. The plant site is designated for geothermal development by the County's General Plan; development of the site is contemplated and regulated by the Geothermal Overlay Zone. Title 9, Division 17, Section 91701 and 91702 of the County's Land Use Ordinance. Development of certain geothermal facilities is entitled as of right by the Geothermal Overlay Zone while certain major geothermal facilities are conditionally permitted. Therefore, it is predictable that development of production wells and power facilities would occur at the project site, which is ideally located for such uses. The proposed project maximizes the development of the resource while minimizing the potential environmental effects through the project design elements incorporated by the Applicant as well as the implementation of the recommended mitigation measures.

6.2.3.13 Production Pipeline Alternative

The proposed pipeline route from Production Well Pad OB3 would result in potentially significant but mitigable impacts related to biological resources. Alternatives are considered and addressed in the Jurisdictional Delineation Report, dated July 11, 2002, in support of the Application for the Army Corps Permit (see Appendix K). The Department of Army Permit Application, the Jurisdictional Delineation Report and the Biological Assessment are incorporated by reference for informational purposes.

The purpose and need for the proposed pipeline crossing is to transport brine from proposed Production Well Pad OB3 to the proposed SSU6 energy facility for use as geothermal energy. The purpose and need for the proposed road widening is to allow drill rigs access to Production Well Pad OB3. To accomplish these actions, it is necessary to cross areas of jurisdictional waters of the U.S.

As an alternative to the proposed alignment of the pipeline from Production Well Pad OB3 to the plant site, burying the pipeline in the existing road was evaluated. The pipe support requires at least 16 feet in width when buried under a road. The existing road across the section currently is a minimum width of 10 feet, and would have to be widened by 10 feet to contain the piping structure and maintain sufficient cover. Additionally, to support the equipment required to install, operate, and maintain buried piping, the existing road would have to be widened by 25 feet, and substantially greater wetland impacts would occur.

Because of the corrosive nature of the brine, ultrasonic Nondestructive Examination (NDE) monitoring is proposed to confirm pipe integrity. Such testing requires easy access to the structures, thereby requiring buried piping to be limited in length to the shortest possible distance (for road crossings, for instance). A design contemplating the burial of concrete-lined carbon steel pipe along 600 feet or more would be unacceptable from operational, maintenance, and safety standpoints.

Additionally, as an alternative to the proposed alignment of the pipeline from Production Well Pad OB3 to the plant site, rerouting the geothermal fluid conveyance pipeline has been evaluated. Under this route alternative, the proposed geothermal fluid conveyance pipeline would be routed toward the southwest, in the direction of the existing levee, which runs from north to south from Obsidian Butte to Grubel/Peterson Road. The pipeline would then follow the edge of this levee and turn east onto Grubel/Peterson Road, on the southern side of the road, within agricultural land. The pipeline would then turn north, along the eastern side of Severe Road, and terminate at the power plant site.

This alternative would require 3,500 more feet of piping than the proposed project, which includes a 1,500-foot pipeline. This alternative also would result in impacts to an additional 0.35 acres of waters of the U.S. Because this alternative would affect a larger area of open waters of the U.S., it has potential to affect an area potentially suitable for desert pupfish. Under this alternative, the pipeline also would be adjacent to a drainage ditch with potential Yuma clapper rail habitat.

Failure to collect geothermal fluid in the reserve on Obsidian Butte from Production Well Pad OB3 would substantially restrict energy production capacity to the proposed plant, thereby making it impracticable and infeasible.

The project as proposed incorporates the only layout that is feasible and practicable for the generation of geothermal energy from the Salton Sea KGRA. The proposed wellfield and plant site layout provides the required energy production using the available acreage, at the closest spacing possible without undue interference between wells, while sustaining production over the life of the project.

Wells are sited to ensure responsible use and management of the geothermal resource. Proper distance must be maintained between production areas to ensure that the production wells receive adequate pressure support to maintain their productivity. Similarly, production and injection areas must be properly spaced. For instance, in the western portion of the KGRA, production and injection occur close together because the fault is considered a sealing fault, or diffusion boundary. East of this portion of the KGRA, the fault is not considered a sealing fault, so additional distance is needed between production and injection wells. Additionally, injection and production must be planned so that injection occurs at a structurally lower level than production, as gravity will work to force the heavier, cooler fluids under the hotter, less dense fluids to heat before proceeding to the production wells, preventing premature breakthrough. The drainage areas and injection areas for the existing power plants are shown on Figure 3.2-1, as are existing condensate and/or pond injection areas.

Elimination of Production Well Pad OB3 would substantially reduce the production of geothermal resources and render the project infeasible. Consequently, the alternatives described were not analyzed in detail in this document.

6.2.3.14 Alternative Heat Rejection System

The Alternative Heat Rejection System would include an air-cooled condenser in place of the proposed facility's mechanical draft, counter flow, wooden cooling tower. Air-cooled condensers have fans that draw air past rows of tube bundles containing condensing steam from the steam turbine exhaust. The heat from the condensing steam is absorbed by the air, which is then discharged at a higher temperature.

For non-geothermal uses, a key advantage of an air-cooled condenser is that it uses less makeup water. However, in a geothermal facility, the cooling tower makeup water requirements are met by steam from the geothermal resource as it is condensed in the power cycle. This makes evaporative cooling towers ideally suited for geothermal applications such as the proposed project. An advantage of an air-cooled condenser for a geothermal facility is that it would reduce water vapor plume and cooling tower drift. However, even if an air-cooled condenser is used, the drift and plume are not completely eliminated because an evaporative cooling tower is still required to provide cooling water for plant auxiliaries such as gas removal system inter and after condensers, coolers for the lube oil system, etc.

The local climate in the project area is characterized by high temperatures and low relative humidity (low wet-bulb temperature). Thus, the performance of the air-cooled condenser, which is related to dry-bulb temperature, is relatively poor compared to that of an evaporative tower, which is related to wet-bulb temperature, while the cost is relatively higher. The capital cost of an air-cooled condenser is significantly higher than the cost of a conventional cooling tower with associated circulating pumps and surface condenser. This increased cost is due to a significantly higher number of fans and motors required for air movement, and the large number of tubes required to achieve comparable cooling capacity.

However, even if cost considerations were ignored, the air-cooled condenser cannot achieve the same low condenser pressure as a water-cooled condenser. The turbine efficiency for air-cooled systems is limited in two ways. First, comparable turbine exhaust pressures are not achievable because of higher-pressure drops through the air-cooled tubing configuration. Secondly, because a dry cooling tower depends on a temperature difference related to ambient dry bulb temperature, rather than ambient wet bulb temperature as does the wet cooling tower, there is very little driving force for heat transfer on warmer days. Consequently, the cooling water during "hot days" from a dry cooling tower is warmer than that from a wet cooling tower. Thus, the cooling capacity is reduced, which results in a loss of plant efficiency and electrical generation capacity. The air-cooled condenser also has a higher auxiliary electrical load demand because of the number of and power requirements for the fans. Thus, the plant net electrical output is further reduced.

The disadvantage of higher capital cost and reduced turbine efficiency, with no advantage with respect to reduced water consumption, makes the wet surface condenser more favorable in all respects for a geothermal power plant, especially in hot, arid climates like Imperial County. The proposed project's evaporative cooling tower was found to be the most cost-effective heat rejection system and produced the highest efficiency.

6.2.4 Conclusions

This analysis included an evaluation of the No Project Alternative, Alternate L-Line Interconnection, and alternative generating technologies. The proposed SSU6 Project is the best alternative to achieve the project objectives and none of the alternatives is environmentally superior.

The analysis developed in this chapter demonstrates that there are no alternatives to the proposed project design that are feasible, and would materially lessen any potential adverse environmental effect of the proposed project. Further, the proposed configuration offers the most cost-effective project for using the renewable energy source at the project location. There is no feasible alternative project configuration, generation technology or non-generation technology. Consequently, it is concluded that the proposed geothermal project utilizes proven and reliable technology to efficiently extract the geothermal resource and utilize it for the production of electrical power. No feasible alternative site exists.

Table 6.2-1
COMPARATIVE ANNUAL EMISSIONS

Pollutant	Type	Salton Sea Unit 6 (tons/yr)	Combined Cycle Project (tons/yr) [a]
Particulate matter (PM_{10})	Criteria	16	41.9
Nitrogen dioxide	Criteria	5.8	43.9
Carbon monoxide	Criteria	10	43.2
Volatile organic compounds	Criteria	1.4	10.7
Sulfur dioxide	Criteria	0.49	3.5
Hydrogen sulfide	Non- criteria	14	---
Ammonia	Non- criteria	2754	38.0
Hazardous air pollutants (HAPs)	Non- criteria	0.8	3.6
Carbon dioxide	Greenhouse Gas	179,100	819,060
Methane	Greenhouse Gas	534	64

[a] CEC Staff Assessment – Magnolia Power Project for criteria pollutants; Magnolia Power Project for Ammonia; Central Valley Energy Center AFC for HAPs; AP-42, Chapter 3.1 for Combined Cycle Project Greenhouse Gases.

Table 6.2-2
ESTIMATED AREA OF DISTURBANCE FOR ALTERNATE L-LINE INTERCONNECTION

	Length (miles)	Area of Disturbance		Acres	
		Temporary	Permanent	Temporary	Permanent
Energy Facility	N/A		80 acres	80.0	80.0
Construction Lay-down Area at Plant Site	N/A	1300' x 675'	N/A	20.0	0
Substation	N/A	700' x 700'	700' x 700'	11.0	11.0
Production Wells	N/A	5 pads (4 pads at 300'x700' each, and 1 pad 560'x560') (1) with 10 Production wells	5 pads (4 pads at 300'x700' each, and 1 pad 560'x560') (1) with 10 Production wells	26.2	26.2
Injection Wells	N/A	3 pads (3 pads at 300'x700' each) with 6 Injection wells	3 pads (3 pads at 300'x700' each) with 6 Injection wells	15.4	15.4
Production Pipelines	1.0	100' Right of Way plus 10% for expansion joints for 1 mile	100' Right of Way plus 10% for expansion joints for 1 mile	13.3	13.3
Injection Pipelines	6.0	100' Right of Way plus 10% for expansion joints for 3 miles	100' Right of Way plus 10% for expansion joints for 3 miles	40.0	40.0
Alternate L-Line Interconnection Pole Locations	N/A	1 Acre each for 118 Towers	30'x40' = 0.03 Acres for Each Pole	118.0(3)	3.5(3)
Construction Parking Area	N/A	550' x 350'	N/A	4.4	0.0
IID Midway Interconnection Pole Locations	N/A	1 Acre each for 88 Towers	30'x40' = 0.03 Acres for Each Pole	88.0	2.6
Staging and Laydown Areas	N/A	5 Staging/Laydown Areas along L-Line Interconnection, 3 Staging/Laydown Areas along IID Midway Interconnection All at 6 acres each	N/A	48.0	0
Pull Sites	N/A	1 Pull Site for Every 2 Miles Along Transmission Routes	N/A	50.4(2)	0
Total Disturbance	N/A	N/A	N/A	514.7	192.0

Notes: N/A Not Applicable

(1) 1.7 acres of OB5 is currently disturbed.

(2) Temporary impacts from pull sites would be 11.4 acres more than what is proposed for the SSU6 Project.

(3) Impacts from power poles for the Alternate L-Line Interconnection would result in an additional 29 acres of temporary and 0.9 acre of permanent impact compared to the proposed project.

Table 6.2-3
SOIL MAPPING UNITS IDENTIFIED FOR
ALTERNATE L-LINE INTERCONNECTION

Alternate L-Line Interconnection beginning at intersection of Banner Road and SH-86	MP 0-0.13	Meloland very fine sandy loam, wet
	MP 0.13-0.42	Vint and Indio very fine sandy loams, wet
	MP 0.42-0.67	Indio-Vint complex
	MP 0.67-1.43	Glenbar complex
	MP 1.43-1.74	Meloland fine sand
	MP 1.74-2.10	Indio loam
	MP 2.10-2.67	Indio-Vint complex
	MP 2.67-3.01	Meloland fine sand
	MP 3.01-3.50	Indio-Vint complex
	MP 3.50-3.64	Meloland fine sand
	MP 3.64-4.48	Niland gravelly sand
	MP 4.48-4.70	Rositas fine sand, 0 to 2 percent slopes
	MP 4.70 -4.93	Rositas fine sand, wet, 0 to 2 percent slopes
	MP 4.93-5.00	Niland gravelly sand, wet
	MP 500-5.05	Rositas fine sand, 0 to 2 percent slopes
	MP 5.05-6.02	No soil survey available for an intermittent .94 miles
	MP 6.02-6.24	Meloland very fine sandy loam, wet
	MP 6.24-6.79	Vint loamy very fine sand, wet
	MP 6.79-6.86	Imperial-Glenbar silty clay loams, wet, 0 to 2 percent slopes
	MP 6.86-7.17	Niland gravelly sand
	MP 7.17-7.35	Glenbar complex
	MP 7.35-7.42	Meloland fine sand
	MP 7.42-7.51	Niland gravelly sand
	MP 7.51-7.53	Glenbar complex

Table 6.2-4
FARMLAND DESIGNATION FOR THE ALTERNATE L-LINE INTERCONNECTION

Project Component	Approximate Acreage / Mileposts / Transmission Tower	Soil Name	Area/Miles Potentially Important Farmland	
			Prime	Statewide Importance
Alternate L-Line Interconnection Beginning at intersection of Banner Road and SH-86	MP 0 – 0.13 0 tower locations	Meloland very fine sandy loam, wet	0.13 miles 0.0 acres disturbance for towers	--
	MP 0.13 – 0.42 2 tower locations	Vint and Indio very fine sandy loams, wet	0.29 miles 0.06 acres disturbance for towers	--
	MP 0.42 – 0.67 3 tower locations	Indio-Vint complex	0.25 miles 0.09 acres disturbance for towers	--
	MP 0.67 – 1.43 2 tower locations	Glenbar complex	--	0.76 miles 0.06 acres disturbance for towers
	MP 1.43 – 1.74 2 tower locations	Meloland fine sand	--	0.31 miles 0.06 acres disturbance for towers
	MP 1.74 – 2.10 1 tower location	Indio loam	0.36 miles 0.03 acres disturbance for towers	--
	MP 2.10 – 2.67 4 tower locations	Indio-Vint complex	0.57 miles 0.12 acres disturbance for towers	--
	MP 2.67 – 3.01 1 tower location	Meloland fine sand	--	0.34 miles 0.03 acres disturbance for towers
	MP 3.01 – 3.50 3 tower locations	Indio-Vint complex	0.49 miles 0.15 acres disturbance for towers	--
	MP 3.50 – 3.64 1 tower location	Meloland fine sand	--	0.14 miles 0.03 acres disturbance for towers
	MP 3.64 – 4.48 4 tower locations	Niland gravelly sand	--	0.84 miles 0.12 acres disturbance for towers

Table 6.2-4 (continued)
FARMLAND DESIGNATION FOR THE ALTERNATE L-LINE INTERCONNECTION

Project Component	Approximate Acreage / Mileposts / Transmission Tower	Soil Name	Area/Miles Potentially Important Farmland	
			Prime	Statewide Importance
Alternate L-Line Interconnection Beginning at intersection of Banner Road and SH-86	MP 0 – 0.13 0 tower locations	Meloland very fine sandy loam, wet	0.13 miles 0.0 acres disturbance for towers	--
	MP 4.48 – 4.70 1 tower location	Rositas fine sand, 0 to 2 percent slopes	--	0.2 miles 0.03 acres disturbance for towers
	MP 4.70 – 4.93 2 tower locations	Rositas fine sand, wet, 0 to 2 percent slopes	--	0.23 miles 0.06 acres disturbance for towers
	MP 4.93 – 5.00 0 tower locations	Niland gravelly sand, wet	--	0.07 miles 0.0 acres disturbance for towers
	MP 5.00 – 5.05 0 tower locations	Rositas fine sand, 0 to 2 percent slopes	--	0.05 miles 0.0 acres disturbance for towers
	MP 5.05 – 6.02 5 tower locations	No survey available for an intermittent .94 miles.	--	--
	MP 6.02 – 6.24 0 tower locations	Meloland very fine sandy loam, wet	0.22 miles 0.0 acres disturbance for towers	--
	MP 6.24 – 6.79 3 tower locations	Vint loamy very fine sand, wet	0.55 miles 0.09 acres disturbance for towers	--
	MP 6.79 – 6.86 1 tower location	Imperial-Glenbar silty clay loams, wet, 0 to 2 percent slopes	--	0.07 miles 0.03 acres disturbance for towers
	MP 6.86 – 7.17 1 tower location	Niland gravelly sand	--	0.31 miles 0.03 acres disturbance for towers
	MP 7.17 – 7.35 1 tower location	Glenbar complex	--	0.18 miles 0.03 acres disturbance for towers
	MP 7.35 – 7.42 1 tower location	Meloland fine sand	--	0.07 miles 0.03 acres disturbance for towers

Table 6.2-4 (continued)
FARMLAND DESIGNATION FOR THE ALTERNATE L-LINE INTERCONNECTION

Project Component	Approximate Acreage / Mileposts / Transmission Tower	Soil Name	Area/Miles Potentially Important Farmland	
			Prime	Statewide Importance
Alternate L-Line Interconnection Beginning at intersection of Banner Road and SH-86	MP 0 – 0.13 0 tower locations	Meloland very fine sandy loam, wet	0.13 miles 0.0 acres disturbance for towers	--
	MP 7.42 – 7.51 0 tower location	Niland gravelly sand	--	0.09 miles 0.0 acres disturbance for towers
	MP 7.51 – 7.53 0 tower locations	Glenbar complex	--	0.02 miles 0.0 acres disturbance for towers
Total			**2.86 miles** **0.54 acres disturbance for towers**	**3.7 miles** **0.51 acres disturbance for towers**

Table 6.2-5
VISUAL IMPACT SUSCEPTIBILITY – SENSITIVE VIEWING AREAS – ALTERNATE L-LINE INTERCONNECTION

	Existing Scenic Integrity Level	Viewer Sensitivity	Project Visibility	Viewer Exposure	Visual Impact Susceptibility
Sensitive Viewing Area#4	Low	High	High	Low	**Moderate**

Table 6.2-6
VISUAL IMPACT SEVERITY – SENSITIVE VIEWING AREAS – ALTERNATE L-LINE INTERCONNECTION

	Form Contrast	Line Contrast	Color Contrast	Texture Contrast	Scale Dominance	Spatial Dominance	View Blockage Night Lighting	Visual Impact Severity
Sensitive Viewing Area#4	Moderate	Moderate	Low	Moderate	Co-Dominant	Subordinate	Low N/A	**Moderate**

Table 6.2-7
VISUAL IMPACT SIGNIFICANCE – SENSITIVE VIEWING AREAS – ALTERNATE L-LINE INTERCONNECTION

	Description	Visual Impact Susceptibility	Visual Impact Severity	Visual Impact Significance
Sensitive Viewing Area#4	Sensitive Viewing Areas #4 is approximately 0.25 miles from the intersection of SH-86 and the existing L transmission line, the location where the proposed alternative transmission line will tie into the existing transmission line. This area is representative of a traveler's and scattered residence's expected degree of perceived change within this viewshed because of the addition of the proposed transmission line.	Moderate	Low to Moderate	**No Impact**

Table 6.2-8
ALTERNATIVE IMPACT LEVELS RELATIVE TO PROPOSED PROJECT

Issue Area (Resource)	Natural Gas Combined Cycle	Natural Gas Furnace/ Boiler STG	Natural Gas Supercritical Boiler STG	Pulverized Coal	Fluidized Bed Combustion	Integrated Gasification	Solar	Biomass	Wind
Impact Levels									
Air Quality	+2	+2	+2	+2	+2	+2	-1	+2	-1
Agriculture and Soils	0	0	0	0	0	0	+2	0	+2
Water Quality	+1	+2	+2	+2	+2	+1	0	+2	-1
Biology	-1	-1	-1	+1	+1	+1	+2	+2	+2
Cultural	0	0	0	0	0	0	+2	0	+2
Paleontology	0	0	0	0	0	0	+2	0	+2
Land Use	0	0	0	+1	+1	+1	+2	0	+2
Socioeconomic	0	0	0	0	0	0	0	0	0
Traffic	0	+1	+1	+1	+1	+1	0	+1	0
Noise	+1	+1	+1	+2	+2	+2	-1	+1	+2
Visual	+1	+2	+2	+2	+2	+2	+2	+2	+2
Waste	+1	+1	+1	+2	+2	+2	-2	+2	-1
Hazardous Materials	+2	+2	+2	+2	+2	+2	-2	+2	-2
Public Health	+1	+1	+1	+2	+2	+1	0	+1	0
Worker Safety	0	0	0	0	0	0	-1	0	+1
Totals	**+10**	**+14**	**+14**	**+18**	**+18**	**+15**	**+5**	**+15**	**+6**

-2 much lower impact
-1 somewhat lower impact
0 similar impact
+1 somewhat higher impact
+2 much higher impact

Figure 6.1-2
SCENIC ATTRACTIVENESS EVALUATION FORM FOR SENSITIVE VIEW AREA #4

Landform	H (5)	H/M (4)	M (3)	M/L (2)	**L (1)**
Vegetation	H (5)	H/M (4)	M (3)	M/L (2)	**L (1)**
Water	H (5)	H/M (4)	M (3)	M/L (2)	**L (1)**
Color	H (5)	H/M (4)	M (3)	M/L (2)	**L (1)**
Adjacent Scenery	H (5)	H/M (4)	M (3)	M/L (2)	**L (1)**
Scarcity	H (5)	H/M (4)	M (3)	**M/L (2)**	L (1)
Modifications*	H (2)	H/M (1)	M (0)	**M/L (-2)**	L (-4)
Scenic Attractiveness Class C (5)					

Scenic Quality Classifications
A = 19 or more
B = 12 to 18
C = 11 or less

Notes:

Evaluation score is bold and underlined
H = High; M = Moderate; and L = Low
* = Explains cultural modifications present in the landscape, ranging from negative intrusions (-4) to those that complement the scenic quality and promote visual harmony (2)

Narrative Landscape Description and Photograph. The photo was taken from SH-86, approximately 0.25 miles from the existing "L"-line intersection (See Figure 5.12-1). This photo depicts a typical view from the highway of the Alternate L-Line Interconnection, which will be placed approximately 150 feet east of an existing transmission line that runs along the eastern edge of the highway. This site is over 11 miles from the proposed plant site. The picture was taken looking west toward the existing "L"-line. Minimal topographic diversity is evident within this setting, with few form and line characteristics produced by distant views of mountain ranges. The homogeneous vegetation is characteristic of non-irrigated lands within the VSOI and consists of various desert scrub species. The vegetation offers few interesting color and textural qualities to the natural setting. Water and rockforms are void in this highly modified setting. Cultural modifications include several transmission lines present along SH-86.